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"जानने का अधिकार, जीने का अधिकार"
Mazdoor Kisan Shakti Sangathan
"The Right to Information, The Right to Live"

"पुराने को छोड़ नये के तरफ"
Jawaharlal Nehru
"Step Out From the Old to the New"

IS 3100 (1980): Men's Wool-cotton Short Drawers [TXD 10: Hosiery]

"ज्ञान से एक नये भारत का निर्माण"
Satyanarayan Gangaram Pitroda
"Invent a New India Using Knowledge"

"ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है"
Bhartṛhari—Nītiśatakam
"Knowledge is such a treasure which cannot be stolen"

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Indian Standard

SPECIFICATION FOR
MEN'S WOOL-COTTON SHORT DRAWERS

(*First Revision*)

UDC   687·112·43 : 687·34

INDIAN   STANDARDS   INSTITUTION
MANAK   BHAVAN,   9   BAHADUR   SHAH   ZAFAR   MARG
NEW DELHI 110002

Gr 5

AMENDMENT NO. 1 OCTOBER 1988
TO
IS 3100 : 1980 SPECIFICATION FOR MEN'S WOOL-COTTON SHORT DRAWERS

(First Revision)

(*Page 7, clause* **3.6.1**) — Substitute the following for the existing matter:

'Portion to be Stitched	Type of Stitch	Sewing Thread
i) Joining at the inner side of the legs, back of drawers and attaching the crutch pieces to the drawers	Three-thread overlock	Two strands of cotton sewing thread of 24s/3 count (250 dtex × 3) in the needle and primary looper and one strand of cotton sewing thread of 40s/2 count (145 d tex × 2) in the secondary looper
	or	
	Flat lock	Three strands of cotton sewing thread 60s/3 count (100 dtex × 3) or 40s/2 count (145 dtex × 2) in the needle and one strand of same sewing thread in each of the two loopers
ii) Hemmings of waist and bottom of legs	Three-thread overlock	One strand of cotton sewing thread of 24s/3 count (250 dtex × 3) in the needle and one strand of sewing thread of 60s/3 count (100 dtex × 3) or 40s/2 count (145 dtex × 3) in each of the primary and secondary looper
iii) Front opening and attaching of flaps	Lock stitch	One strand of cotton sewing thread of 60s/3 count (100 dtex × 3) or 40s/2 count (145 dtex × 2) in each of the needle and the looper'

[*Page 10, Table* 2, *Sl No.* v(a) *and* (b), *col* 3] — Substitute '4.0' *for* '4' and '3.0' *for* '2'.

(TDC 15)

Indian Standard

SPECIFICATION FOR
MEN'S WOOL-COTTON SHORT DRAWERS

(First Revision)

Hosiery Sectional Committee, TDC 15

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SHRI R. NATARAJAN	Rank Knitting Mills, Tirupur
SHRI S. T. NOTANY	Federation of Hosiery Manufacturers' Association of India, Bombay
SHRI RATNAKAR ASGEKAR (*Alternate*)	

(*Continued from page* 1)

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Indian Standard

SPECIFICATION FOR
MEN'S WOOL-COTTON SHORT DRAWERS

(First Revision)

0. FOREWORD

0.1 This Indian Standard (First Revision) was adopted by the Indian Standards Institution on 15 January 1980, after the draft finalized by the Hosiery Sectional Committee had been approved by the Textile Division Council.

0.2 This standard which was published in 1965 has been taken up for revision to:

   a) define the grade of wool tops used for spinning the worsted yarn,

   b) specify the tolerance on mass of individual drawers, and

   c) substitute the requirement of scouring efficiency of drawers with the scouring loss.

0.3 To familiarize the industry with International System of Units (SI Units), the basic SI Units as well as the recommended SI Units for use in the textile industry are given in Appendix B.

   0.3.1 Standards of Weights and Measures Act 1976 also stipulates use of SI Units.

0.4 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test, shall be rounded off in accordance with IS : 2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

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*Rules for rounding off numerical values (*revised*).

1. SCOPE

1.1 This standard prescribes the constructional details and other particulars of scoured or bleached wool-cotton, plain-knitted short drawers.

NOTE — The description ' wool-cotton ' indicates that short drawers are made with worsted yarn and cotton yarn the former used in the face of the fabric and the latter plaited at the back of the fabric. The proportion of the worsted yarn and cotton yarn in the fabric shall be 55 and 45 percent by mass respectively.

1.2 This standard does not specify the general appearance, feel, shade, etc, of the short drawers (*see also* **4.4**).

2. MATERIAL

2.1 Worsted Yarn — The worsted yarn used for knitting drawers shall be evenly spun from 58s grade wool tops. The approximate count of yarn shall be 40 tex (Nm 25) and the single thread breaking load shall not be less than 1 225 mN (125 gf) (*see* Notes 1 and 2).

NOTE 1 — The breaking load of yarn shall be determined on a test length of 500 mm using a constant rate of traverse type machine having a traverse of 300 ± 15 mm per minute (*see also* IS : 1670-1970*).

NOTE 2 — The breaking load values of yarn removed from knitted fabric shall not be less than 95 percent of the specified values.

2.2 Cotton Yarn — The cotton yarn used in plaiting of drawers shall be evenly spun. The approximate count of yarn shall be 18s (33 tex) and the single thread breaking load shall not be less than 2 200 mN (225 gf) (*see* Notes 1 and 2 under **2.1**).

2.3 Cotton Calico — conforming to IS : 1544-1973†.

2.4 Cotton Tape — 25 mm wide and 30 cm longer than the corresponding waist girth and conforming to Variety 7 of IS : 1895-1970‡.

2.5 Cotton Sewing Threads — bleached, of 24s/3 (250 dtex × 3), 40s/2 (145 dtex × 2) or 60s/3 (100 dtex × 3) count and conforming to IS : 1720-1978§.

3. MANUFACTURE

3.1 In shape, the drawers shall generally be as shown in Fig. 1. The drawers shall be tailored neatly out of well and evenly knitted fabric, knitted in plain stitches with worsted yarn on the face of the fabric and cotton yarn knitted inside. The wales shall run along the length of the drawer. The two halves of the garment shall be uniform in texture, shade and appearance. The drawers shall not have any seams and joinings along their two sides.

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*Method for determination of breaking load, elongation at break and tenacity o yarns (*first revision*)
†Specification for cotton calico, bleached or dyed (*first revision*).
‡Specification for cotton tape *NEWAR*, grey or dyed (*first revision*).
§Specification for cotton sewing threads (*second revision*).

SECTION X X
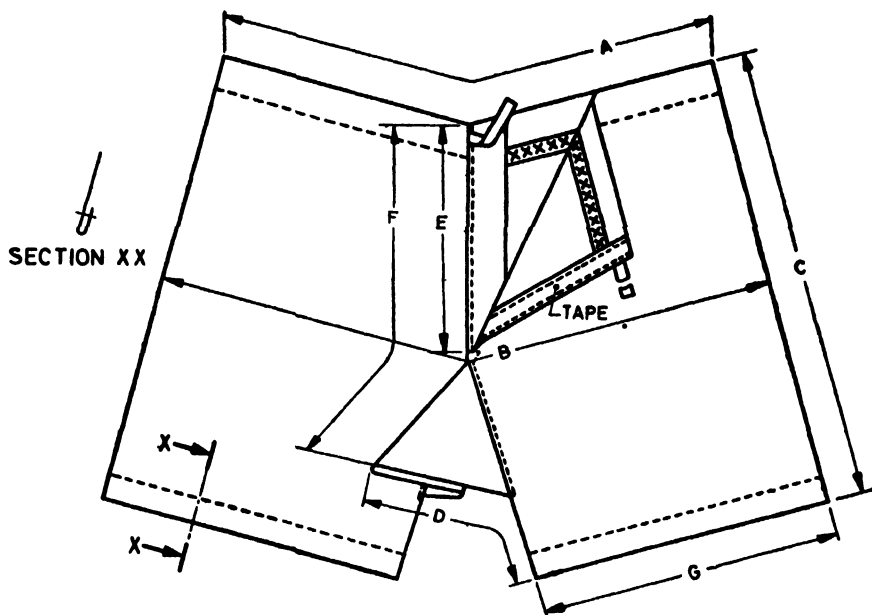
FIG. 1   DRAWERS

3.2 At the bottom of the legs of the drawers, the raw edges of the knitted fabric shall be turned into a depth of 25 mm and shall be sewn to form a hem of 25 ± 5 mm width. The stitches of the hem shall be elastic and shall not give way when the leg of the drawers is stretched to one and a half times its width.

3.3 Waist Band — At the waist of the drawers, the raw edge of the knitted fabric shall be turned into a depth of 40 mm throughout and stitched in such a manner that it is possible to insert the cotton tape through the waist band. The tape shall be stitched centrally inside the waist band at the middle of the back.

3.4 Front Opening — The front of the drawers shall be of a fly-front type. The length of the fly-front shall be in accordance with Table 1, when read with Fig. 1.

3.4.1 The bottom flap at the fly-front opening shall consist of two layers of fabrics, the outer one being knitted fabric as used for drawers and the inner layer of cotton calico. It shall be attached to the drawers

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TABLE 1 DIMENSIONS AND MASS OF WOOL-COTTON SHORT DRAWERS

(*Clause* 3.4)

SIZE	WIDTH ACROSS WAIST	WIDTH ACROSS SEAT (Measured at the Top of the Crutch Piece)	SIDE LENGTH	INSIDE LEG LENGTH	DEPTH OF FLY-FRONT OPENING	DEPTH OF FRONT (Distance from Top of Waist Band to Bottom of Crutch Piece)	WIDTH OF LEG OPENING	MASS PER 10 DRAWERS (*see* NOTE)
	A	*B*	*C*	*D*	*E*	*F*	*G*	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	cm	cm	cm	cm	cm	cm	cm	g
75	37·5	45·5	30	17	17	29	23	1 340
80	40	49·5	36	18	18	30	24	1 520
85	42·5	53·5	41	19	18	32	25·5	1 700
90	45	56	43	22	19	33	26·5	1 860
95	47·5	58·5	48	24	19	34	28	2 020
100	50	61	51	25	20	36	29	2 200
105	52·5	63·5	53	27	22	37	30·5	2 380
TOLERANCE	± 1·0	± 2·0	± 2·0	± 1·5	± 1·5	± 1·5	± 1·5	—
METHOD OF TEST	A-2	A-2	A-2	A-2	A-2	A-2	A-2	A-3

NOTE — A tolerance of minus 3 percent on the mass of individual drawer shall be permissible provided the average minimum mass for 10 drawers is maintained.

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with lock stitches and the joint shall be further reinforced with cotton tape. The fabric used for the bottom flap shall be of the same shade as that of the fabric used for making the drawers. The width of the bottom flap shall be 40 mm. The upper flap would be reinforced inside with cotton tape. The two flaps shall be stitched together at the bottom to facilitate opening and closing as shown in Fig. 2.

3.5 Crutch Piece — The fabric used for crutch piece shall be of the same type and construction as that of the drawers. The crutch piece shall be reinforced throughout with cotton calico. The crutch piece and the reinforcement fabric shall be scoured or bleached as the drawers.

3.6 Seams and Stitches

3.6.1 The sewing details of the drawers shall be as under:

Portion to be Stitched	Type of Stitch	Sewing Thread
i) Joining at the inner side of the legs, back of drawers and attaching the crutch pieces to the drawers	Three-thread overlock stitch	Two strands of sewing thread of 24s/3 (250 dtex × 3) count in the needle and primary looper and one strand of sewing thread of 40s/2 (145 dtex) × 2) count in the secondary looper
	or	or
	Flatlock stitch	Three strands of sewing thread af 24s/3 (250 dtex × 3) count in the needle and one strand of sewing thread of 40s/2 (145 dtex × 2) in the looper
ii) Hemmings of waist and bottom of legs	Two-thread overlock stitch	One strand of sewing thread of 24s/3 (250 dtex × 3) count in the needle and one strand of sewing thread of 40s/2 (145 dtex × 2) in the looper
iii) Front opening and attaching of flaps	Lock stitch	do

NOTE — Sewing thread of 60s/3 (100 dtex × 3) may be used in place of 40s/2 (145 dtex × 2).
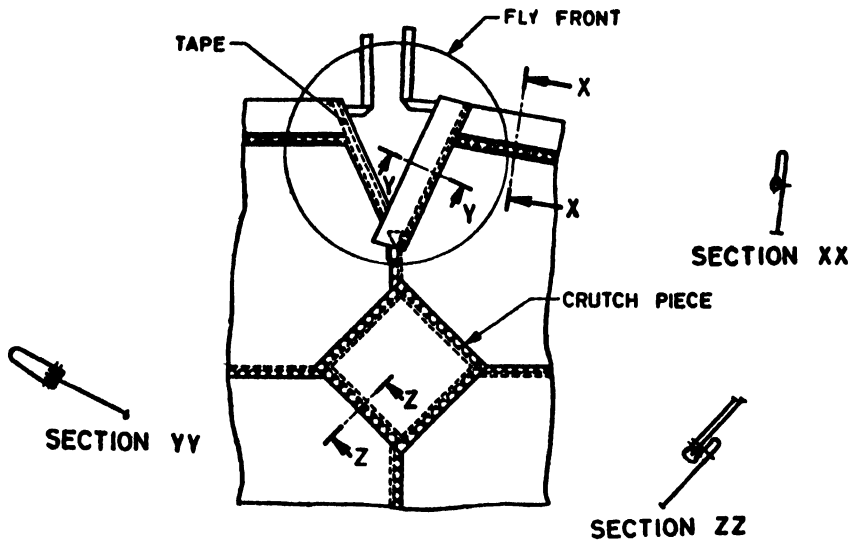
FIG. 2 DETAILS OF SEWING FLY-FRONT, CRUTCH PIECE, ETC (INSIDE)

3.6.2 The stitches shall be of even tension throughout and all the loose ends securely fastened off. The number of stitches shall not be less than 5 per centimetre. The seams and joins shall withstand stretching in all directions to the full extent of the knitted fabric.

4. REQUIREMENTS

4.1 Dimensions and Mass — The drawers shall conform to the requirements of Table 1 read with Fig. 1.

4.2 The drawers shall also conform to the requirements as given in Table 2.

4.3 The drawers shall be free from objectionable flaws. The objectionable flaws shall be those which strike immediately the eyes and shall be deemed to include:

    a) Appearance of cotton yarn on the face of the fabric;

    b) Noticeable broken thread in the body;

    c) Large mends;

    d) Ladders;

    e) Dropped stitches;

   f) Noticeable oil or other stains;

   g) Holes, cuts or tears extending beyond 6 mm square in area;

   h) Missed stitches at the stitched portion;

   j) Improper reinforcement; and

   k) Any other defect which would significantly mar the appearance or serviceability.

4.4 Sealed Sample — If. in order to illustrate or specify the indeterminable characteristics such as general appearance, feel and type of finish, a sample has been agreed upon and sealed, the supply shall be in conformity with the sample in such respects.

4.4.1 The custody of the sealed sample shall be a matter of prior agreement between the buyer and the seller.

5. MARKING

5.1 A suitable cloth label shall be securely stitched to each piece on the inside of the waist (back side) on which the following shall be marked:

   a) Name of the material, namely Wool-cotton short drawers;

   b) Size;

   c) Manufacturer's name, initials or trade-mark, if any; and

   d) Any other information as required by the buyer.

5.1.1 The drawers may also be marked with the ISI Certification Mark.

NOTE — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act and the Rules and Regulations made thereunder. The ISI Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

6. PRESERVATION

6.1 The drawers shall be preserved with a heavy dose of naphthalene, using a minimum quantity of 5 kilograms per cubic metre of the volume of the bale.

7. PACKING

7.1 The drawers of the same size and shape shall be packed in a bale in accordance with IS : 2518-1964* or IS : 3353-1966†, as the case may be.

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   *Code for seaworthy packaging of wool hosiery yarn and goods.

   †Code for inland packaging of wool hosiery yarn and goods.

TABLE 2 REQUIREMENTS OF WOOL-COTTON SHORT DRAWERS

(*Clause* 4.2)

Sl No.	Characteristic	Requirement	Method of Test
(1)	(2)	(3)	(4)
i)	Wales/dm	80 ± 4 ⎫	A-4
ii)	Courses/dm	100 ± 4 ⎭	
iii)	Dimensional change, percent, *Max*	5	A-5
iv)	*p*H value of aqueous extract		IS : 1390-1961* (cold method)
	a) Worsted yarn	5·0 to 7·5	
	b) Cotton yarn	6 to 8	
v)	Scouring loss, percent, *Max*		A-6
	a) Worsted yarn	4	
	b) Cotton yarn	2	
vi)	Blend composition		IS : 2006-1978†
	a) Wool	55 ± 2 percent	
	b) Cotton	45 ± 2 percent	
vii)	Grade of wool tops	58s or finer	IS : 5911-1977‡

*Methods for determination of *p*H value of aqueous extracts of textile materials.
†Quantitative chemical analysis of binary mixtures of protein fibres and certain other fibres (*first revision*).
‡Fineness grades of wool tops (*first revision*).

7.2 Alternatively, the drawers may be packed by the method given below, when specifically agreed to between the buyer and the seller:

Ten drawers of the same size and shape, folded suitably, shall be tied with twine or string to form a bundle. Five such bundles shall be wrapped with an inner layer of polyethylene film of minimum 40 microns (*see* IS : 2508-1963*) or kraft paper (*see* IS : 1397-1967†) and an outer layer of heavy cee cloth (*see* IS : 3751-1966‡) or equivalent hessian cloth to form a rectangular bale. The overlaps of the inner layer shall be at least 10 cm to ensure full protection of the contents of the bale. The overlaps of the outer layer of heavy cee cloth or hessian shall be such that it can properly and securely sewn around the bale. The bale shall be stitched with double 3-ply jute twine with not less than 12 stitches per decimetre taking care not to pierce inner wrappings during stitching. Sufficient heavy cee cloth or hessian shall be pulled out at each corner to form ears of about 15 cm in length. The bale shall be made secure by fastening with at least 2 bands of steel strips (hoops) or metal wire in each direction along the length and width of the bale.

*Specification for low density polyethylene films.
†Specification for kraft paper (*first revision*).
‡Specification for heavy cee cloth.

8. SAMPLING

8.1 Lot — In any consignment all drawers of same size and manufactured from the same quality of worsted and cotton yarn shall constitute a lot.

8.1.1 The conformity of the lot shall be determined on the basis of the tests carried out on the samples selected from it.

8.2 Unless otherwise agreed to between the buyer and the seller, the number of drawers to be selected from a lot shall be according to col 1 and 2 of Table 3. To ensure the randomness of selection, the procedure given in IS : 4905-1968* shall be followed.

TABLE 3 NUMBER OF DRAWERS TO BE SELECTED FROM A LOT AND PERMISSIBLE NUMBER OF NON-CONFORMING DRAWERS

NUMBER OF DRAWERS IN THE LOT	NON-DESTRUCTIVE TESTING		DESTRUCTIVE TESTING
	Number of Drawers to be Selected	Permissible Number of Non-conforming Drawers	
(1)	(2)	(3)	(4)
Up to 300	10	1	2
301 ,, 500	20	1	2
501 ,, 1 000	30	2	3
1 001 ,, 3 000	50	3	5
3 001 and above	80	5	5

8.3 The sample size and criteria for conformity for various characteristics shall be as follows:

Characteristics	Number of Tests	Criteria for Conformity
Freedom from defects, dimensions and number of wales and courses	All the drawers selected according to col 2 of Table 3	Non-conforming drawers not to exceed the corresponding number given in col 3 of Table 3
Mass	All the groups of 10 drawers made from those selected according to col 2 of Table 3	Each observed value to satisfy the specified requirement
pH value, scouring loss, relaxation shrinkage, chromium content and colour fastness	See col 4 of Table 3	All the test specimens to satisfy the relevant requirements

*Methods for random sampling.

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A P P E N D I X   A

(*Tables* 1 *and* 2)

METHODS OF TEST

A-1. CONDITIONING OF TEST SPECIMENS AND ATMOSPHERIC CONDITIONS FOR TESTING

A-1.1 The test specimens shall preferably be conditioned for testing and tested in the standard atmosphere as given in IS : 6359-1971*.

A-2. DIMENSIONS

A-2.1 Take a drawer constituting the test sample (*see* **8.3**). Lay it flat on a horizontal surface. Remove all creases and wrinkles without distorting it. Measure correct to the nearest millimetre the dimensions given in Table 1.

A-3. MASS

A-3.1 Take a set of 10 drawers constituting the test sample (*see* **8.3**). Condition them to moisture equilibrium for 24 hours (*see* **A-1.1**) and weigh to an accuracy of 10 g. Also determine the mass of individual drawer.

A-4. WALES AND COURSES

A-4.1 Take a drawer constituting the test sample (*see* **8.3**). Lay it flat on a horizontal surface. Remove all creases and wrinkles without distorting it. Count with the help of a pick glass or magnifying glass, the number of wales and courses per decimetre of the fabric at five different places and calculate the average.

A-5. DIMENSIONAL CHANGE (DUE TO RELAXATION)

A-5.1 Marking of Test Specimens — Take one of the pieces from the test sample (*see* **8.3**). Mark centrally on it by means of indelible ink or a fast dyed cotton sewing thread an area 15 × 15 cm with two of its sides running in the direction of wales and the other two in the direction of courses. Spread this test specimen on a flat smooth surface, carefully removing by hand all creases and wrinkles. Within this area, mark six pairs of marks, three pairs each in the wales and courses direction in such a way that the distance between each pair of marks is the same.

A-5.2 Procedure

A-5.2.1 Place test specimen on a glass plate and carefully remove by hand all creases and wrinkles without stretching the test specimen and

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*Method for conditioning of textiles.

place the other glass plate on the test specimen. Measure correct to the nearest millimetre, the distance between each pair of marks separately.

A-5.2.2 Lay the test specimen flat in a water tight tray of suitable size and of depth 10 cm, *Min*. Soak it under a head of 25 mm of water containing 0·5 percent suitable wetting agent at room temperature (30 to 35°C) for 2 hours. Drain out the water and remove the test specimen carefully so that it is not stretched and lay it flat on a smooth surface. Remove the excess water by absorbent material and dry it at room temperature.

NOTE — Removal of excess water by wringing the test specimen is not permitted.

A-5.2.3 After drying, condition the test specimen to moisture equilibrium at the room temperature. Place it on the glass plate, carefully remove all wrinkles and creases and place the other glass plate on the test specimen. Measure correct to the nearest millimetre, the distance between each pair of marks separately.

A-5.3 Calculation

A-5.3.1 Calculate, separately, the percentage of dimensional change both in the directions of wales and courses by the following formula:

$$Sr = \frac{100 \times (a - b)}{a}$$

where

    Sr = dimensional change (due to relaxation), percent;

    a = distance between a pair of marks (along the wales or courses as the case may be) before soaking; and

    b = the distance between the same pair of marks after soaking.

A-5.3.2 Calculate separately the dimensional change (due to relaxation) of all the three lines in the direction of wales and courses and calculate average dimensional change (due to relaxation) in each direction.

A-6. SCOURING LOSS

A-6.1 Test Specimens — Take a drawer from the test sample (*see* **8.3**). Cut the bottom portion. Taking an end of any one of the cut and frayed loops, unravel the worsted and cotton yarn separately. Collect the yarn so removed separately into convenient bundles. Continue unravelling till about 10 g of worsted and cotton yarn in the form of bundles are accumulated. These shall constitute the test specimens.

A-6.2 Procedure

A-6.2.1 *Worsted Yarn*

A-6.2.1.1 Lay the test specimen to constant mass in the drying oven at 105 ± 3°C temperature and determine its mass accurately.

Note — Constant mass shall be deemed to have been reached if the difference between the two successive weighings at an interval of 20 minutes is less than 0·05 percent.

A-6.2.1.2 Extract the above specimen with a mixture of benzene and methyl alcohol in the proportion of 3 : 2 in a Soxhlet apparatus for 4 hours at the rate of 5 extractions per hour, by placing the specimen in a thimble and covering it with cotton wool previously extracted with the above stated mixture of benzene and methyl alcohol in the proportion of 3 : 2. The solvent shall then be distilled off from the extract. Dry the residue to a constant mass (*see* Note under **A-6.2.1.1**) at 105 ± 3°C and determine the mass accurately.

A-6.2.1.3 Calculate the scouring loss of worsted yarn by the following formula:

$$\text{Scouring loss, percent} = \frac{100\,a}{b}$$

where

> a = mass of the dry residue (*see* **A-6.2.1.2**), and
>
> b = mass of the test specimen (*see* **A-6.2.1.1**).

A-6.2.2 *Cotton Yarn* — Determine the scouring loss of test specimen by following the procedure prescribed for mild method in IS : 1383-1977*.

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*Methods for determining scouring loss of cotton textile materials (*first revision*).

APPENDIX B

(*Clause* 0.3)

SI UNITS

TABLE 4   INTERNATIONAL SYSTEM UNITS

Base Units

QUANTITY	UNIT	SYMBOL
Length	metre	m
Mass	kilogram	kg
Time	second	s
Electric current	ampere	A
Thermodynamic temperature	kelvin	K
Luminous intensity	candela	cd
Amount of substance	mole	mol

Supplementary Units

QUANTITY	UNIT	SYMBOL
Plane angle	radian	rad
Solid angle	steradian	sr

Derived Units

QUANTITY	UNIT	SYMBOL	DEFINITION
Force	newton	N	$1 \text{ N} = 1 \text{ kg.m/s}^2$
Energy	joule	J	$1 \text{ J} = 1 \text{ N.m}$
Power	watt	W	$1 \text{ W} = 1 \text{ J/s}$
Flux	weber	Wb	$1 \text{ Wb} = 1 \text{ V.s}$
Flux density	tesla	T	$1 \text{ T} = 1 \text{ Wb/m}^2$
Frequency	hertz	Hz	$1 \text{ Hz} = 1 \text{ c/s } (\text{s}^{-1})$
Electric conductance	siemens	S	$1 \text{ S} = 1 \text{ A/V}$
Electromotive force	volt	V	$1 \text{ V} = 1 \text{ W/A}$
Pressure, stress	pascal	Pa	$1 \text{ Pa} = 1 \text{ N/m}^2$

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TABLE 5 RECOMMENDED SI UNITS FOR TEXTILES

Sl No. (1)	Characteristic (2)	SI Units		Application (5)
		Unit(s) (3)	Abbreviation(s) (4)	
1)	Length	Millimetre	mm	Fibres
		Millimetre, centimetre	mm, cm	Samples, test specimens (as appropriate)
		Metre	m	Yarns, ropes, cordages, fabrics
2)	Width	Millimetre	mm	Narrow fabrics
		Centimetre	cm	Other fabrics
		Millimetre, centimetre	mm, cm	Samples, test specimen (as appropriate)
		Centimetre, metre	cm, m	Carpets, druggets, *DURRIES* (as appropriate)
3)	Thickness	Micrometre (micron)	μm	Delicate fabrics
		Millimetre	mm	Other fabrics, carpets, felts
4)	Linear density	Tex	tex	Yarns
		Millitex	mtex	Fibres
		Decitex	dtex	Filaments, filament yarns
		Kilotex	ktex	Slivers, ropes, cordages
5)	Diameter	Micrometre (micron)	μm	Fibres
		Millimetre	mm	Yarns, ropes, cordages
6)	Circumference	Millimetre	mm	Ropes, cordages
7)	Threads in fabric:			Woven fabrics (as appropriate)
	a) Lengthwise	Number per centimetre	ends/cm	
		Number per decimetre	ends/dm	
	b) Widthwise	Number per centimetre	picks/cm	
		Number per decimetre	picks/dm	
8)	Warp threads in loom	Number per centimetre	ends/cm	Reeds
9)	Stitches in the knitted fabric:			Knitted fabrics (as appropriate)
	a) Lengthwise	Courses per centimetre	courses/cm	
		Courses per decimetre	courses/dm	
	b) Widthwise	Wales per centimetre	wales/cm	
		Wales per decimetre	wales/dm	

(*Continued*)

TABLE 5 RECOMMENDED SI UNITS FOR TEXTILES — *Contd*

SL No.	CHARACTERISTIC	SI Units		APPLICATION
		Unit(s)	Abbreviation(s)	
(1)	(2)	(3)	(4)	(5)
10)	Stitch length	Millimetre	mm	Knitted fabrics Made-up fabrics
11)	Mass per unit area	Grams per square metre	g/m²	Fabrics
12)	Mass per unit length	Grams per metre	g/m	Fabrics
13)	Twist	Turns per centimetre	turns/cm	Yarns, ropes (as appropriate)
		Turns per metre	turns/m	
14)	Test or gauge length	Millimetre, centimetre	mm, cm	Fibres, yarns and fabric specimens (as appropriate)
15)	Breaking load	Millinewton	mN	Fibres, delicate yarns (individual or skeins)
		Newton	N	Strong yarns (individual or skeins), ropes, cordages, fabrics
16)	Breaking length	Kilometre	km	Yarns
17)	Tenacity	Millinewton per tex	mN/tex	Fibres, yarns (individual or skeins)
18)	Twist factor or twist multiplier	Turns per centimetre × square root of tex	$\dfrac{\text{turns/cm}}{\times \sqrt{\text{tex}}}$	Yarns (as appropriate)
		Turns per metre × square root of tex	$\dfrac{\text{turns/m}}{\times \sqrt{\text{tex}}}$	
19)	Bursting strength	Newton per square centimetre	N/cm²	Fabrics
20)	Tear strength	Millinewton Newton	mN N	Fabrics (as appropriate)
21)	Pile height	Millimetre	mm	Carpets
22)	Pile density	Mass of pile yarn in grams per square metre per millimetre pile height	g/m²/mm pile height	Pile carpets
23)	Elastic modulus	Millinewton per tex per unit deformation	mN/tex/ unit deformation	Fibres, yarns, strands

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INDIAN STANDARDS
ON
HOSIERY

IS

833-1977	Gents' rib-knitted nylon stockings (*first revision*)
834-1975	Cotton yarn, grey, for hosiery (*second revision*)
2187-1973	Socks, wool worsted (*first revision*)
2360-1977	Jerseys, Y-neck plain-knitted worsted (*second revision*)
2518-1964	Code for seaworthy packaging of wool hosiery yarn and goods
2522-1963	Knitted worsted mufflers
2523-1963	Worsted hose tops
2783-1976	Balaclava caps, wool plain-knitted (*second revision*)
3086-1975	Code for seaworthy packaging of cotton hosiery yarn and goods
3100-1965	Men's wool-cotton short drawers
3325-1965	Code for inland packaging of cotton hosiery yarn and goods
3326-1978	Cotton stockinette (*first revision*)
3329-1973	Socks cotton (*first revision*)
3330-1978	Wool cotton vests (*first revision*)
3353-1966	Code for inland packing of wool hosiery yarn and goods
3530-1966	Rib-knitted cotton stockings
3555-1966	Cotton singlets, white with blue welting
3596-1967	Glossary of terms relating to hosiery
3604-1977	Jerseys, round neck, plain-knitted, worsted (*first revision*)
3617-1966	Gents' worsted pullovers, one-piece (interlock-knitted)
4044-1967	Gents' slipovers
4046-1977	Gents' cotton knitted briefs (*first revision*)
4053-1967	Knitted puttees, dyed
4375-1975	Cotton knitted sports shirts (*first revision*)
4376-1967	Plain-knitted gents cotton short drawers
4582-1968	Ladies' cardigans
4809-1968	Cotton-knitted string vests
4964-1980	Plain-knitted cotton vests (*second revision*)
4965 (Part I)-1975	Interlock-knitted cotton vests: Part I Fabric (*first revision*)
4965 (Part II)-1975	Interlock-knitted cotton vests: Part II Vests (*first revision*)
5084-1969	Nylon socks
5085-1976	Berets, wool, knitted (*first revision*)
5450-1976	Gloves, wool, knitted (*first revision*)
5524-1980	Men's wool-cotton underpants (*first revision*)
7026-1973	Hosiery yarn, worsted
7747-1975	Hand-knitting wool yarn (worsted)
9469-1980	Plain knitted cotton fabric

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Dyestuffs
Grading of fibre and yarns
Grading of raw silk
Hosiery
Jute — bags and fabrics
Jute mill accessories
Narrow fabrics
National flag of India
Nylon fabrics
Packaging code
Physical test methods
Rayon fabrics

Foot fabrics, handloom
Ropes and cordages
Sampling of textiles, methods for
Silk fabrics — handloom and khadi
Sizing and finishing materials
Spinning machinery components
Terminology
Textile floor coverings
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